

REMARKS/ARGUMENTS

Status of the Claims

Claims 1-20 are presently pending in the application and stand rejected under 35 U.S.C. § 102(b) as being anticipated by Sugiura et al., U.S. Patent No. 6,361,980. Claims 1-4 and 7-8 have now been cancelled, claims 5 and 9 have been amended, and new claim 21 has been added. Support for the amendments to claim 5 may be found, for example, in paragraphs [0012] - [0015], which describe the overall claimed process steps (a), (b), and (c). Support for the temperature range of reaction zone A may be found, for example, in paragraph [0024], support for the temperature limitation of reaction zone B may be found, for example, in paragraph [0027] and original claim 8. Support for the total reaction time may be found, for example, in paragraph [0029], and Examples 2-4. Claim 9 has been amended to make the claim language consistent with that of claim 5. Support for the new claim 21 reciting the amount of triglycerides in the final product may be found, for example, in paragraph [0030]. Accordingly, it is submitted that the amendments do not add new matter and are proper.

35 U.S.C. § 102(b) Rejection Based On Sugiura et al.

Claims 1-20 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Sugiura et al. According to the Office Action, Sugiura et al. discloses a process of preparing diglyceride esters of fatty acids comprising the steps of (a) circulating a reaction mixture through an enzymatic reaction zone that is maintained at a temperature conducive to enzymatic catalysis and (b) circulating the reaction mixture through a thermal zone at a temperature to facilitate the rearrangement of 1,3-diglycerides to 1,2-diglycerides, and further discloses reaction conditions and reactants, as claimed in examined claims 1-20. To anticipate a claim, the reference must teach every element of the amended claims. (See MPEP at 2131). The Applicants respectfully submit that the claims, as amended, particularly in view of the following arguments, overcome the rejection because Sugiura et al. does not teach every element of the amended claims.

The amended claims of the present technology are directed to a process for preparing triglyceride esters of fatty acids. In particular, amended claim 5 specifies that the reaction mixture is circulated through an enzymatic reaction zone A, maintained at a temperature of about 35°C to 70°C, to obtain a mixture enriched in 1,3-diglycerides. This mixture is then circulated to a thermal reaction zone B maintained at a temperature at least 20°C greater than that of reaction zone A to obtain a mixture enriched in 1,2-diglycerides. The mixture enriched in 1,2-diglycerides is then re-circulated through enzymatic reaction zone A to produce a final product enriched in triglycerides. The claimed process is a more efficient process for preparing triglycerides and reduces reaction times to less than 48 hours, whereas prior art processes required extremely long reaction times such as more than a week. See, Example 1 and paragraph [0008] if the specification.

By contrast, Sugiura et al. is directed to a process for preparing diglycerides of high purity. Triglycerides are an unwanted side product since they reduce the purity of the desired diglycerides. Sugiura et al. at col. 2, line 64 - col. 3, line 9. In the examples illustrating the Sugiura et al. process, the amount of triglycerides in the final product only ranges from 5.9% by weight to 7.5% by weight. See, Examples 1-3 of Sugiura et al. Thus, Sugiura et al. does not disclose a process for preparing triglycerides wherein the final product is enriched in triglycerides, as required by amended claim 5.

Sugiura et al. also does not disclose a thermal reaction zone B that is maintained at a temperature at least 20°C greater than reaction zone A, which is operated at a temperature in the range of about 35°C to 70°C, as required by amended claim 5. To meet the temperature limitations of claim 5, the thermal reaction zone B must be operated at a minimum temperature of 55°C. Sugiura et al., however, teaches that the dehydration tank, which the Examiner considers to be equivalent to the claimed thermal reaction zone B, is operated only at a temperature of 40°C. See, col. 7, lines 12-14. Consequently, Sugiura et al. does not disclose or suggest a process wherein the thermal reaction zone B is operated at a temperature at least 20°C greater than the 35°C to 70°C temperature of enzyme reaction zone A to obtain a mixture enriched in 1,2-diglycerides, as required by amended claim 5. The increased temperature in

thermal reaction zone B is necessary to cause thermal rearrangement of the 1,3-diglycerides prepared in reaction zone A to form 1,2-diglycerides. Nor does Sugiura et al. disclose or suggest further reacting the mixture enriched in 1,2-diglycerides to obtain a final product enriched in triglycerides, as also required by amended claim 5. Rather, Sugiura et al. is only concerned with preparing diglycerides of high purity in high yield and nowhere teaches or suggests the process steps necessary to prepare an end product enriched in triglycerides, as recited in the amended claims. Because Sugiura et al. does not disclose all of the limitations in amended claim 5, Sugiura et al. does not anticipate claim 5, or the claims dependent thereon, under 35 U.S.C. § 102(b).

Conclusion

In view of the amendments and arguments provided herein, Applicants believe that the pending rejection of the claims has been overcome. Applicants respectfully submitted that the claims, as amended, are in condition for allowance and reconsideration of the application is therefore respectfully requested.

Applicants believe that, in accordance with 1.17(a)(1), a one month response extension fee of \$130 is due in conjunction with the filing of this Response. The Commissioner is, however, hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. 13-0017, in the name of McAndrews, Held & Malloy, Ltd.

Respectfully submitted,

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/Priscilla F. Gallagher/

Priscilla F. Gallagher

Reg. No. 32223

Attorney for Applicants

MCANDREWS, HELD & MALLOY, LTD.
500 West Madison Street, 34th Floor
Chicago, IL 60661
Phone: (312) 775-8000
Fax: (312) 775-8100